**PATENT APPLICATION**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Tomoyuki MATSUYAMA, Toru KIUCHI, Hiroshi CHIBA and Kazuyuki KATO

Application No.: Rule 53(b) Continuation of 09/487,996 filed January 20, 2000

Filed: February 7, 2002 Docket No.: 105218.01

For: METHOD FOR MANUFACTURING EXPOSURE APPARATUS AND METHOD FOR MANUFACTURING MICRODEVICE

PRELIMINARY AMENDMENT

Director of the U.S. Patent and Trademark Office
Washington, D. C. 20231

Sir:

Prior to initial examination of this application, please amend the above-identified application as follows:

IN THE ABSTRACT:

Please replace the Abstract with the substitute Abstract attached hereto.

IN THE CLAIMS:

Please replace claims 1, 3 and 25 as follows:

1. (Amended) A method for manufacturing an exposure apparatus comprising the steps of:

a providing step for providing a projection system projecting and exposing an image of a predetermined pattern formed on a reticle to a photosensitive substrate;

a setting step for setting a correction member correcting residual aberration in said projection system at a predetermined position in an optical path between a reticle setting

position where said reticle is set and a substrate setting position where said photosensitive substrate is set; and

a correcting step for correcting degradation of optical characteristic of said projection system caused by setting said correction member at said predetermined position;

wherein said correcting step includes a first adjusting step for adjusting at least one of said reticle setting position and said substrate setting position.

3. (Amended) The method for manufacturing an exposure apparatus according to claim 1, wherein said correcting step further includes a first calculating step, prior to said setting step, for calculating an adjusting amount of at least one of said reticle setting position and said substrate setting position in order to correct said degradation of optical characteristic produced in accordance with the thickness of said correction member; and

said first adjusting step includes a step for adjusting at least one of said reticle setting position and said substrate setting position based on a first calculated information obtained in said first calculating step.

25. (Amended) A method for manufacturing an exposure apparatus comprising the steps of:

a providing step for providing a projection system projecting and exposing an image of a predetermined pattern formed on a reticle to a photosensitive substrate;

a measuring step for measuring residual aberration in said projection system;

a processing step for processing a correction member for correcting said residual aberration in said projection system based on measured information obtained in said measuring step;

an inserting step for inserting a correction member obtained in said processing step at a predetermined position in an optical path between a reticle setting position where

said reticle is set and a substrate setting position where said photosensitive substrate is set; and

a first adjusting step for adjusting at least one of said reticle setting position and said substrate setting position in accordance with a change in an object-to-image distance of said projection system produced by inserting said correction member.

Please add the following claims 56-63:

--56. (New) A method for manufacturing an exposure apparatus, comprising the steps of:

a first providing step for providing a projection system projecting and exposing an image of a predetermined pattern formed on a reticle onto a photosensitive substrate;

a second providing step for providing a correction member correcting residual aberration in said projection system;

a setting step for setting said correction member at a predetermined position in an optical path between a reticle setting position where said reticle is set and a substrate setting position where said photosensitive substrate is set; and

a correcting step for correcting degradation of optical characteristic of said projection system caused by setting said correction member at said predetermined position;

wherein said correcting step includes a first adjusting step for adjusting at least one of said reticle setting position and said substrate setting position.--

--57. (New) An exposure apparatus product made by the method of claim 56.--

--58. (New) A process for improving an optical characteristic of a projection system for projecting and exposing an image of a predetermined pattern formed on a reticle onto a photosensitive substrate, comprising the steps of:

a providing step for providing a correction member correcting residual aberration in said projection system;

a setting step for setting said correction member at a predetermined position in an optical path between a reticle setting position where said reticle is set and a substrate setting position where said photosensitive substrate is set; and

a correcting step for correcting degradation of optical characteristic of said projection system caused by setting said correction member at said predetermined position;

wherein said correcting step includes a first adjusting step for adjusting at least one of said reticle setting position and said substrate setting position.--

--59. (New) A projection system product improved by the process of claim 58.--

--60. (New) A process for improving an optical characteristic of a projection system for projecting and exposing an image of a predetermined pattern formed on a reticle onto a photosensitive substrate, comprising the steps of:

a measuring step for measuring residual aberration in said projection system;

a processing step for processing a correction member for correcting said residual aberration in said projection system based on measured information obtained in said measuring step;

an inserting step for inserting the correction member obtained in said processing step at a predetermined position in an optical path between a reticle setting position where said reticle is set and a substrate setting position where said photosensitive substrate is set; and

a first adjusting step for adjusting at least one of said reticle setting position and said substrate setting position in accordance with a change in an object-to-image distance of said projection system produced by inserting said correction member.--

--61. (New) A projection system product improved by the process of claim 60.--

--62. (New) A process for improving an optical characteristic of a projection system for an exposure apparatus, comprising the steps of:

a measuring step for measuring the optical characteristic of the projection system projecting and exposing an image of a predetermined pattern formed on a reticle onto a photosensitive substrate;

an improving step for improving the optical characteristic of said projection system based on a measurement result obtained by said measuring step; and

an adjusting step for adjusting an illumination characteristic for illuminating said reticle in accordance with said improving step.--

--63. (New) A projection system product improved by the process of claim 62.--

REMARKS

Claims 1-63 are pending. By this Amendment, the Abstract is amended so that it is less than 150 words in length, claims 1, 3 and 25 are amended for clarity, and claims 56-63 are added. Applicants submit that the amendments to claims 1, 3 and 25 do not narrow those claims. The attached Appendix includes marked-up copies of each rewritten paragraph (37 C.F.R. §1.121(b)(1)(iii)) and claim (37 C.F.R. §1.121(c)(1)(ii)).

An Information Disclosure Statement is filed herewith, which identifies the references of record from the parent application. The Examiner is requested to consider those references when acting upon this application.

Examination and allowance in due course are earnestly solicited.

Respectfully submitted,

James A. Oliff
Registration No. 27,075

Mario A. Costantino
Registration No. 33,565

JAO:MAC/ccs

Attachments:
Substitute Abstract
Appendix
Information Disclosure Statement

Date: February 7, 2002

**OLIFF & BERRIDGE, PLC**
**P.O. Box 19928**
**Alexandria, Virginia 22320**
**Telephone: (703) 836-6400**

DEPOSIT ACCOUNT USE AUTHORIZATION
Please grant any extension necessary for entry;
Charge any fee due to our Deposit Account No. 15-0461

## ABSTRACT

The invention includes a process which provides a projection system which projects an image of a predetermined pattern formed on a reticle to a photosensitive substrate; a setting process which sets a correction member which corrects residual aberration in the projection system at a predetermined position between a reticle setting position where the reticle is arranged and a substrate setting position where the photosensitive substrate is set; and a process which corrects degradation of optical characteristics of the projection system caused by setting the correction member at the predetermined position. Furthermore, the correction process includes a first adjusting process which adjusts at least one of the reticle setting position and the substrate setting position. Accordingly, even if a correction plate which corrects residual aberrations of the projection system is mounted into a projection optical path, deterioration of optical characteristics caused by mounting the correction plate is preferably corrected.

APPENDIX

Changes to Abstract:

The following is a marked-up version of the amended Abstract:

The invention includes a process which provides a projection system which projects an image of a predetermined pattern formed on a reticle to a photosensitive substrate; a setting process which sets a correction member which corrects residual aberration in the projection system at a predetermined position between a reticle setting position where the reticle is arranged and a substrate setting position where the photosensitive substrate is set; and a process which corrects degradation of optical characteristics of the projection system caused by setting the correction member at the predetermined position. Furthermore, the correction process includes a first adjusting process which adjusts at least one of the reticle setting position and the substrate setting position. Accordingly, even if a correction plate which corrects residual aberrations of the projection system is mounted into a projection optical path, deterioration of optical characteristics caused by mounting the correction plate is preferably corrected~~, and the invention makes it possible to manufacture an exposure apparatus equipped with a projection system adjusted in extremely high imaging quality~~.

Changes to Claims:

Claims 56-63 are added.

The following are marked-up versions of the amended claims:

1. (Amended) A method for manufacturing an exposure apparatus comprising the steps of:

a providing step for providing a projection system projecting and exposing an image of a predetermined pattern formed on a reticle to a photosensitive substrate;

a setting step for setting a correction member correcting residual aberration in said projection system at a predetermined position in an optical path between a reticle setting position where said reticle is set and a substrate setting position where said photosensitive substrate is set; and

a correcting step for correcting degradation of optical characteristic of said projection system caused by setting said correction member at said predetermined position;

wherein said correcting step includes a first adjusting step for adjusting at least one of said reticle setting position and said substrate setting position.

3. (Amended) The method for manufacturing an exposure apparatus according to claim 1~~;~~, wherein said correcting step further includes a first calculating step, prior to said setting step, for calculating an adjusting amount of at least one of said reticle setting position and said substrate setting position in order to correct said degradation of ~~said~~ optical characteristic produced in accordance with the thickness of said correction member~~;~~; and~~;~~

said first adjusting step includes a step for adjusting at least one of said reticle setting position and said substrate setting position based on a first calculated information obtained in said first calculating step.

25. (Amended) A method for manufacturing an exposure apparatus comprising the steps of:

a providing step for providing a projection system projecting and exposing an image of a predetermined pattern formed on a reticle to a photosensitive substrate;

a measuring step for measuring residual aberration in said projection system;

a processing step for processing a correction member for correcting said residual aberration in said projection system based on measured information obtained in said measuring step;

an inserting step for inserting a correction member obtained in said processing step at a predetermined position in an optical path between a reticle setting position where said reticle is set and a substrate setting position where said photosensitive substrate is set; and

a first adjusting step for adjusting at least one of said reticle setting position and said substrate setting position in accordance with a change in an object-to-image distance of said projection system produced by inserting said correction member.